

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1: (currently amended) A nuclear fission reactor comprising:

- a. a core consisting essentially of a powdered fissile metal hydride;
- b. an atmosphere comprising a hydrogen isotope to which said powdered fissile metal hydride is exposed;
- c. a non-fissile material ~~separated~~ positioned separate from said core that where said non-fissile material absorbs and desorbs said hydrogen isotope based on temperature; and
- d. a means for controlling said non-fissile material temperature.

Claims 2 -7: (canceled)

Claim 8: (previously amended) The nuclear fission reactor of claim 1 wherein said powdered fissile metal hydride comprises fissile uranium hydride.

Claims 9-10: (canceled)

Claim 11: (withdrawn) The nuclear fission reactor of claim 1 wherein said atmosphere consists essentially of a mixture of deuterium and protium.

Claims 12-17: (canceled)

Claim 18: (original) The nuclear fission reactor of claim 1 wherein said non-fissile material comprises a non-fissile metal hydride.

Claim 19: (original) The nuclear fission reactor of claim 18 wherein said non-fissile material comprises a non-fissile uranium hydride.

Claim 20: (canceled)

Claim 21:(original) The nuclear fission reactor of claim 1 additionally comprising a plurality of trays holding said non-fissile material.

Claim 22-24:(canceled)

Claim 25: (previously amended) The nuclear fission reactor of claim 1 wherein said powdered fissile metal hydride comprises at least one fissile actinide hydride.

Claim 26: (currently amended) The nuclear fission reactor of claim 25 wherein said at least one powdered fissile actinide hydride is selected from the group consisting of hydrides of uranium and plutonium.

Claim 27: (previously amended) The nuclear fission reactor of claim 25 additionally comprising at least one powdered fertile actinide hydride.

Claim 28: (previously amended) The nuclear fission reactor of claim 27 wherein said at least one powdered fertile actinide hydride is selected from the group consisting of hydrides of U^{238} and Th^{232} .

Claim 29: (withdrawn) A nuclear fission reaction method comprising the steps of:

- a. providing a nuclear reactor core comprising a fissile metal hydride and a non-fissile hydrogen isotope absorbing and desorbing material within a pressurization vessel;
- b. pressurizing said pressurization vessel with an atmosphere comprising at least one hydrogen isotope;
- c. increasing said non-fissile hydrogen isotope absorbing and desorbing material temperature to desorb said at least one hydrogen isotope with a concomitant increase in moderation of said nuclear reactor core to establish criticality;
- d. establishing criticality of said nuclear reactor core to generate a resultant heat energy; and
- e. extracting said resultant heat energy.